IN THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1.   (Currently Amended) A method of managing traffic flow across links of an information network, comprising:

monitoring traffic demands from a source node of an information network to a destination node of the network, including bandwidths associated with each of the traffic demands;

determining for each traffic demand and for a given link of the network, that portion of the bandwidth associated with each traffic demand which portion is provided by the given link;

determining a maximum value of link utilization among all links of the network, where link utilization is defined as the amount of bandwidth used by all traffic demands routed trough a given link with respect to a total capacity of the link;

calculating a cost metric for each link of the network based on information comprising the traffic demand and maximum value of link utilization;

selecting a path with consideration to minimizing the maximum value of link utilization based on each cost metric; and

routing the traffic demands across the ~~links of the network in such a manner as to minimize the maximum value of link utilization~~ path.

2.   (Currently Amended) The method of claim 1, ~~including~~ further comprising routing traffic demands over more than one path in the network.

3.   (Currently Amended) The method of claim 1, ~~including~~ further comprising routing each traffic demand over a single path in the network.

4.   (New) A method of managing traffic flow across links of an information network comprising:

receiving a demand to route network traffic;

determining a demand size of the demand;

determining a routing procedure associated with the demand;

calculating a cost metric for each of a plurality of links of a network, the cost metric for each link being associated with information comprising the routing procedure and a link utilization, the link utilization being a ratio of link capacities; and

selecting a path to route network traffic based on the calculated cost metric for each of the plurality of links.

5.   (New) The method of claim 4 wherein, the network traffic is routed over a multi-protocol label switching network.

6.   (New) The method of claim 4 wherein, the routing procedure is a shortest path routing procedure and the cost metric is determined by a ratio of the used link capacity and the demand size to the total link capacity.

7.   (New) The method of claim 4 wherein, the routing procedure is a shortest-widest path routing procedure and the cost metric is associated with a percentage of link idle capacity.

8.   (New) The method of claim 7 wherein, if there are multiple candidate paths, the path with minimum hops or the shortest distance is chosen.

9.   (New) The method of claim 4 wherein, the routing procedure is a Min-Max link utilization routing procedure and the cost metric is associated with a maximum link utilization of the link, the demand size, and link utilization of the plurality of links.

10.   (New) The method of claim 9 wherein, the cost metric is adjusted by a small scalar value and the demand size where a cost metric for a link is the same as a cost metric for another link.

11.   (New) The method of claim 4 wherein, the routing procedure is a hybrid routing procedure and the cost metric is associated with the link utilization, the demand size, a maximum link utilization for the link, a number of hops of a minimum hop path for the demand, and the link utilization of the plurality of links.

12.   (New) The method of claim 11 wherein, the selected path to route network traffic is the shortest path.

13.   (New) The method of claim 4 wherein, selecting the path to route network traffic is based on a weight associated with the calculated cost metric for each of the plurality of links; each weight being manipulated in a open shortest path first network.

14.   (New) A computer readable medium including computing instructions for managing traffic flow across links of an information network, the instructions comprising:

monitoring traffic demands from a source node of an information network to a destination node of the network, including bandwidths associated with each of the traffic demands;

determining for each traffic demand and for a given link of the network, that portion of the bandwidth associated with each traffic demand which portion is provided by the given link;

determining a maximum value of link utilization among all links of the network, where link utilization is defined as the amount of bandwidth used by all traffic demands routed trough a given link with respect to a total capacity of the link;

calculating a cost metric for each link of the network based on information comprising the traffic demand and maximum value of link utilization;

selecting a path with consideration to minimizing the maximum value of link utilization based on each cost metric; and

routing the traffic demands across the path.

15.   (New) The computer readable medium of claim 14, including instructions further comprising routing traffic demands over more than one path in the network.

16.   (New) The computer readable medium of claim 14, including instructions further comprising routing each traffic demand over a single path in the network.

17.   (New) A computer readable medium including computing instructions for managing traffic flow across links of an information network, the instructions comprising:

receiving a demand to route network traffic;

determining a demand size of the demand;

determining a routing procedure associated with the demand;

calculating a cost metric for each of a plurality of links of a network; the cost metric for each link being associated with information comprising the routing procedure and a link utilization, the link utilization being a ratio of link capacities; and

selecting a path with consideration to minimizing a maximum utilization value of link utilization to route network traffic based on the calculated cost metric for each of the plurality of links.

18.   (New) The computer readable medium of claim 17 wherein, the network traffic is routed over a multi-protocol label switching network.

19   (New) The computer readable medium of claim 17 wherein, the routing procedure is a shortest path routing procedure and the cost metric is determined by a ratio of the used link capacity and the demand size to the total link capacity.

20.   (New) The computer readable medium of claim 17 wherein, the routing procedure is a shortest-widest path routing procedure and the cost metric is associated with a percentage of link idle capacity.

21.   (New) The computer readable medium of claim 17 wherein, if there are multiple candidate paths, the path with minimum hops or the shortest distance is chosen.

22.   (New) The computer readable medium of claim 17 wherein, the routing procedure is a Min-Max link utilization routing procedure and the cost metric is associated with a maximum link utilization of the link, the demand size, and link utilization of the plurality of links.

23.   (New) The computer readable medium of claim 22 wherein, the cost metric is adjusted by a small scalar value and the demand size where a cost metric for a link is the same as a cost metric for another link.

24.   (New) The computer readable medium of claim 17 wherein, the routing procedure is a hybrid routing procedure and the cost metric is associated with the link utilization, the demand size, a maximum link utilization for the link, a number of hops of a minimum hop path for the demand, and the link utilization of the plurality of links.

25. (New) The computer readable medium of claim 24 wherein, the selected path to route network traffic is the shortest path.

26. (New) The computer readable medium of claim 17 wherein, the selecting of the path to route network traffic is based on a weight associated with the calculated cost metric for each of the plurality of links; each weight being manipulated in a open shortest path first network.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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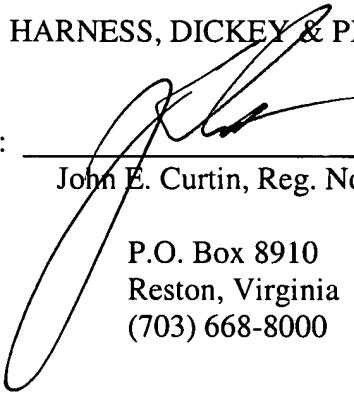
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REPLACEMENT PARAGRAPHS FOR SPECIFICATION
(MARKED UP VERSION)

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the priority of U.S. Provisional Application No. 60/125,603 filed

March 19, 1999, and entitled "Internet Traffic Engineering: Theory and Algorithms."[[.]]

This is a continuation of U.S. Patent Application Number 09/520,247 the disclosure of

which is incorporated by reference herein.